Government of Canada | Gouvernement du Canada
Canadian Forestry Service | Service Canadien des forêts

ISSN 0820-8107

NO. 167

Canadian Forestry Service-Maritimes
TECHNICAL NOTE

SPRUCE BUDWORM DEFOLIATION ON PRINCE EDWARD ISLAND IN 1986 AND A FORECAST FOR 1987

Defoliation by the spruce budworm on Prince Edward Island is assessed annually through an aerial survey of the degree of redness of spruce and fir foliage. A forecast of the infestation expected in the coming year is made through a survey of overwintering larvae, the L_2 survey.

The 1986 defoliation survey was conducted during the first week of July and the L_2 in October by the Forest Insect and Disease Survey of the Canadian Forestry Service.

Defoliation

Defoliation again occurred throughout Prince Edward Island in 1986, affecting 98,000 ha, an increase of about 28,000 ha or 40% over 1985 (Figures 1 and 2). This years defoliation was distributed as: severe 565 ha; moderate with severe patches 23 000 ha; moderate 41 000 ha; and light 33 000 ha. Only the severe category showed a reduction, to its lowest point in at least 10 years (Table 1). This was countered by estimates of moderate and light defoliation at their highest levels in over 10 years. The greatest increase occurred in Kings County and eastern Queens County while total defoliation in Prince County changed little (Table 2).

Weather for the 1986 aerial survey was good prior to the survey in terms of needle retention, however, during the actual survey overcast conditions lead observers to conclude that their observations may have been an underestimate in some cases.

Ground defoliation checks supported the opinion that some areas suffered more defoliation than observed from the air. Despite this precaution, the 1986 survey was considered to be successful in describing the current defoliation condition.

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Canadian Forestry Service - Maritimes
P.O. Box 4000, Fredericton, N.B. E3B 5P7
P.O. Box 667, Truro, N.S. B2N 5E5
P.O. Box 190, Charlottetown, P.E.I. C1A 7K2

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Table 1. Spruce budworm defoliation on Prince Edward Island from 1977 to 1986 (hectares).

Year	Light	Moderate	Severe	Total
1977	28 900	39 600	69 600	138 100
1978	9 900	26 700	84 900	121 500
1979	7 700	11 100	17 600	36 400
1980	2 100	7 100	23 900	33 100
1981	15 900	36 600	54 500	107 000
1982	2 200	2 700	10 400	15 300
1983	23 889	15 824	10 070	49 783
1984	500	6 900	8 200	15 600
1985	16 300	12 800	41 000[1]	70 100
1986	*33 400*	*64 000*[2]	*600*	*98 000*

1. Severe and severe with moderate patches.
2. Moderate and moderate with severe patches.

Table 2. Spruce budworm defoliation on Prince Edward Island in 1986 by county (hectares).

County	Defoliation				Total
	Light	Moderate	Moderate with Severe	Severe	
Prince	3 600	12 600	2 500	0	18 700
Queens	9 300	20 800	16 700	600	47 400
Kings	20 500	7 500	3 900	0	31 900
Total	33 400	40 900	23 100	600	98 000

Forecast for 1987

The L_2 survey was conducted at 42 locations throughout Prince Edward Island.[1] The predictions from these are: 2% high; 37% moderate and 58% low populations of spruce budworm for 1987 (Figure 3). In 1985, of 55 points assessed 9% were extreme, 33% were high, 29% were moderate and 29% were low. The highest populations are expected in Queens and southern Kings counties. Prince County will suffer generally low populations with the occasional moderate pocket.

Many of the locations sampled were predominantly white spruce (Table 3), which usually hosts a larger budworm population while suffering less damage than does balsam fir growing in the same location.

Summary

A reduction in the extent of severe defoliation during 1986 was compensated in part by a substantial increase in the areas of moderate defoliation in Queens and Kings counties. The prediction for 1987 is for a continued reduction in the high categories although significant areas of moderate defoliation can be expected.

Table 3. Number of L_2 sample locations in each severity category and percent of total number of locations (brackets) by tree species. Extreme = 41+ larvae per branch; High = 21-40; Moderate = 7-20; Low = 1-6; Nil = 0.

	Tree Species		
Category	balsam fir	white spruce	Total
Extreme	0 (0%)	0 (0%)	0
High	0 (0%)	2 (5%)	2 (5%)
Moderate	2 (5%)	14 (32%)	16 (37%)
Low	8 (20%)	16 (38%)	24 (58%)
NIL	0 (0%)	0 (0%)	0

-B.A. Pendrel and L.P. Magasi
Forest Insect and Disease Survey

November, 1986

[1] Our thanks to E.G. Kettela, CFS-Maritimes, for processing L_2 samples.

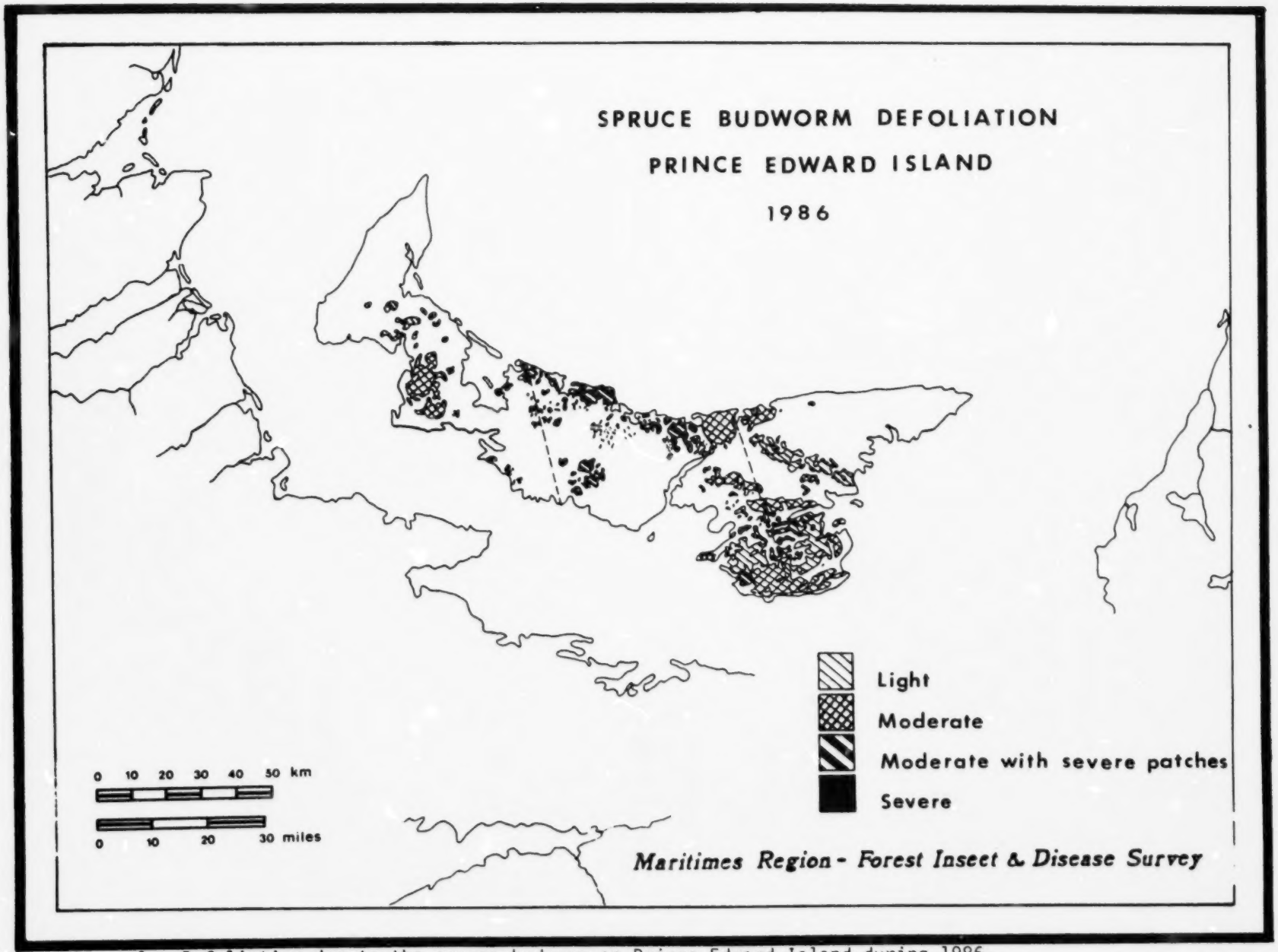

Figure 1. Defoliation due to the spruce budworm on Prince Edward Island during 1986.

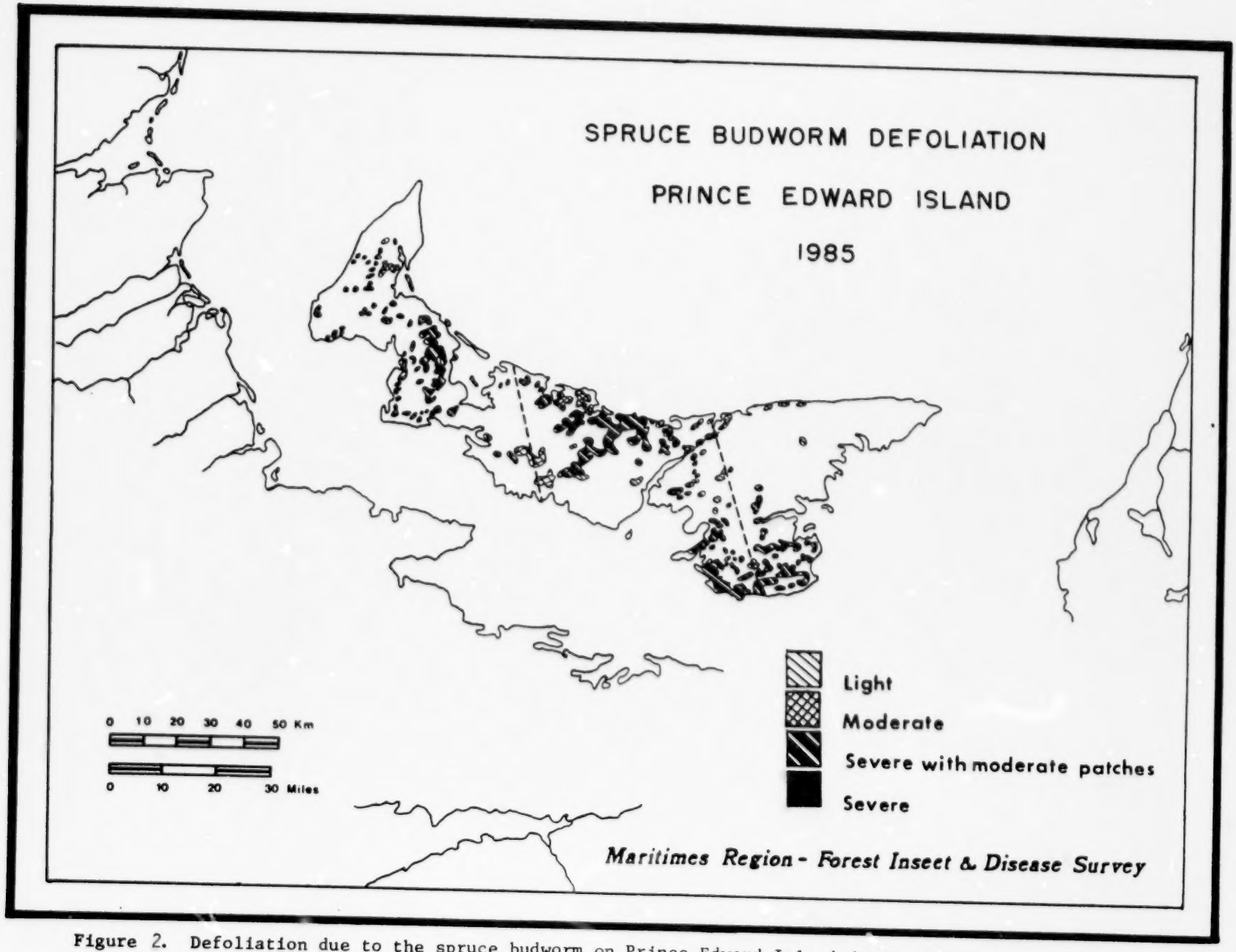

Figure 2. Defoliation due to the spruce budworm on Prince Edward Island during 1985.

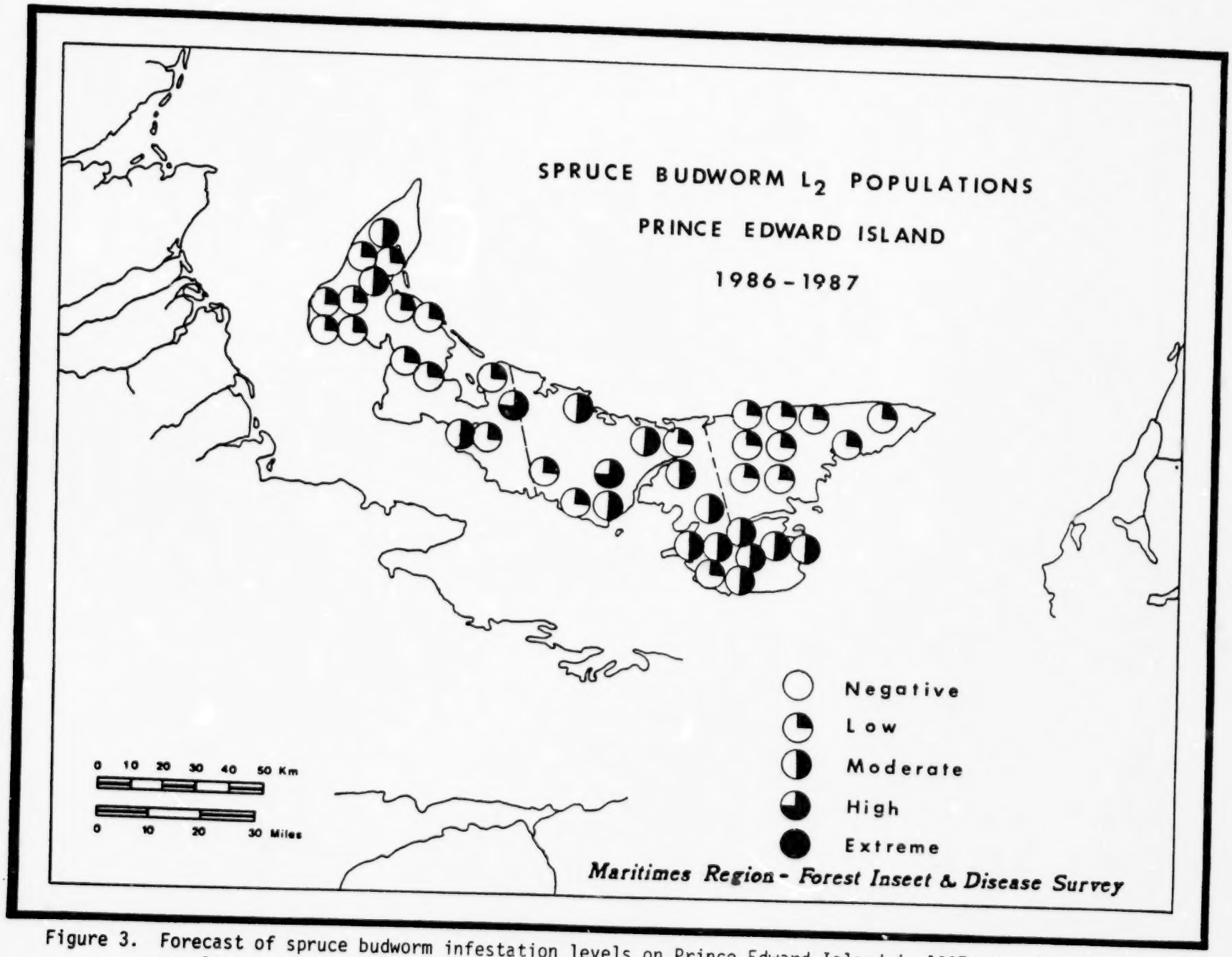

Figure 3. Forecast of spruce budworm infestation levels on Prince Edward Island in 1987, based on L_2 populations in the fall of 1986.